

NEW COMBINATIONS IN MEXICAN PAVONIA (MALVACEAE)—  
 PAVONIA *anisaster* (Standley) Fryxell, comb. nov.

Based on: *Hibiscus anisaster* Standley, Publ. Field Mus. Nat. Hist., Bot. Ser. 4: 230. 1929. Type: Nayarit, between Tepic and Santiago, alt. 1000 m, 15 Sep 1926, *Mexia* 634 (GH! UC! US!).

Standley placed this plant in the wrong genus because the material he studied and described did not have mature fruits, nor did he evidently count the stigmas (five in *Hibiscus*, ten in *Pavonia*). The opportunity to examine specimens with mature fruits, collected more recently from the same area (*Feddema* 820, *McVaugh* 13375, *McVaugh* 18836), which are clearly conspecific with the *Mexia* collection that is the basis for Standley's name, makes it clear that the species is correctly placed in *Pavonia*.

*Pavonia anisaster* is allied to *P. firmiflora* Schery, *P. racemifera* Hooker & Arnott, *P. palmeri* (E. G. Baker) Schery, *P. ortegiana* (Standley) Standley, *P. spicata* Cavanilles, and *P. rhizophorae* Killip. It differs from these species most noticeably in having a dark red corolla.

PAVONIA *oxyphylla* (Moçiño & Sessé ex DeCandolle) Fryxell, comb. nov.

Based on: *Hibiscus oxyphyllus* Moçiño & Sessé ex DeCandolle, Prodr. 1: 455. 1824. Type: in Mexici montibus Xochipici (fl. mex. ic. ined.—IDC microfiche, 86).

Synonyms:

*Pavonia glandulosa* Presl, Rel. Haenk. 2: 129. 1835. Type: Mexico, *Haenke s.n.* (PR—4 sheets!).

*Pavonia melanommata* var. *pringleana* R. E. Fries, K. Svensk. Vet. Akad. Handl. 42: 43. 1907. Type: Morcos, near Yautepec, *Pringle* 8718 (MEXU! MO! UC! US!).

*Pavonia glandulosa* Presl has been regarded previously as a doubtful name (*Contr. U. S. Natl. Herb.* 23: 773. 1923; *Leafl. W. Bot.* 7: 122. 1954) and *Hibiscus oxyphyllus* has generally been retained in *Hibiscus*, usually as a synonym of *H. brasiliensis* L. (*Annuaire Cons. Jard. Bot., Genève* 4: 87. 1900; *Contr. U. S. Natl. Herb.* 23: 781. 1923; *Leafl. W. Bot.* 7: 283. 1955). An examination of type material of Presl's name and of the description and illustration upon which DeCandolle's name is based requires the presentation of the above new combination in specific rank and the following new combination in varietal rank.

PAVONIA *oxyphylla* (Moç. & Sess. ex DC.) Fryx. var. *melanommata* (Robinson & Seaton) Fryxell, stat. et comb. nov.

Based on: *Pavonia melanommata* Robinson & Seaton, Proc. Amer. Acad. Arts 28: 104. 1893. Type: Michoacán: Monte León, *Pringle* 4343 (ARIZ! GH! MO! NY! UC! US—2 sheets!).

Discussion of the distributional and morphological differences between these two varieties and further specimen citations may be found in *Brittonia* 25: 83-85, 1973.—Paul A. Fryxell, *Agronomy Field Laboratory, Texas A&M University, College Station, Texas 77843.*

SEED GERMINATION AND SEEDLINGS OF *KRAMERIA LANCEOLATA* (KRAMERIACEAE)—*Krameria lanceolata* Torr. (= *K. spathulata* Small), sandspur, a suffrutescent low-growing perennial, has thin, wiry rhizomes and large, fleshy storage roots. The small, lanceolate, canescent leaves are deciduous.

Parasitism was first reported in the genus *Krameria* in 1910 (Cannon 1910), but the parasitic behavior of *K. lanceolata* was not recorded until recently (Musselman 1976). Like many species of Scrophulariaceae, Olacaceae, and Santalaceae, *Krameria lanceolata* is a hemiparasite, forming haustoria on roots of neighboring plants. It likewise has a broad host range, attaching to trees, shrubs, grasses, and other plants.

*Krameria lanceolata* occurs from Kansas south to Arizona, Texas, Chihuahua, and Coahuila, Mexico with disjunct populations in Florida and Georgia. In Georgia it occurs on sandy ridges along coastal rivers, and in Florida it is found mostly on deep sands in several northern and central countries. The largest populations we found were near Tampa, Florida.

Very little is known about the life history of these plants. In a review of previous work on this genus Kuijt (1969) states: "We know virtually nothing about the process of germination" and, further, "the entire process of germination . . . is unexplained." Our note records, apparently for the first time, information on germination and seedling development. Observations were made during a cooperative study between Old Dominion University and the Southern Forest Experiment Station of the U. S. Forest Service to survey all root parasites in the Southeast relative to their potential as pathogens of commercial tree species.

#### METHODS AND MATERIALS

Fruits were collected in June 1976 at the ecology study area of the University of South Florida in Tampa and immediately sent to the Forest Service laboratory, Pineville, Louisiana, where they were planted with approximately 20 commercial tree species. Voucher specimens are deposited in the herbarium of Old Dominion University (ODU) and the herbarium of the University of South Florida (USF). Twenty surplus fruits were soaked in water for 48 hours and the seeds were excised. Eleven seeds enlarged due to imbibition of water; nine remained the same size. The 11 enlarged seeds were placed on moist fiber in a germination room maintained at 24° C with 16 hours of light and 8 hours of dark. Only five seeds germinated; they were planted in pots with *Pinus taeda* seedlings.